8/5/19

Multi-Family Development

299 Leydecker Road Town of West Seneca, NY

Downstream Sewer Capacity Analysis Report

Project Description

This project proposes the development of an 8.6 acre site located on the east side of Leydecker Road in the Town of West Seneca. Construction will consist of five multifamily buildings and twelve duplex buildings. The site will also include the construction of on-site utility, lighting and landscaping improvements. The site is currently partially developed with a commercial building and parking lot.

Node 1 – Creek 24in (24”):

Existing Peak Flow measured (wet weather event)	=	4.052 cfs (2.619 mgd)*
Proposed Multi-Family Peak Flow	=	0.112 cfs **
Proposed Peak Flow	=	4.164 cfs
Existing Peak Flow measured (overall)	=	4.576 cfs (2.958 mgd)*
Proposed Multi-Family Peak Flow	=	0.112 cfs **
Proposed Peak Flow	=	4.688 cfs

Capacity of existing 24” RCP pipe @ 0.18% = 10.389 cfs

Conclusion: Monitored flows the day following the 0.53” rainfall event did not exceed the capacity of the existing pipe 24” sewer. During the monitoring period, two times the flow depth exceeded the pipe diameter at Node 1, but at no time did the flow at any point slow or stall which would have caused a backup or flooding at the manhole. I/I mitigation shall be required for the contribution proposed for this project.

Node 2 – West Seneca Psych Center (14”):

Existing Peak Flow measured (wet weather event)	=	1.269 cfs (0.820 mgd)*
Proposed Multi-Family Peak Flow	=	0.112 cfs **
Proposed Peak Flow	=	1.381 cfs
Existing Peak Flow measured (overall)	=	1.386 cfs (0.896 mgd)*
Proposed Multi-Family Peak Flow	=	0.112 cfs **
Proposed Peak Flow	=	1.498 cfs

Capacity of existing 14” RCP pipe @ 1.0% = 5.817 cfs

Conclusion: The proposed peak flow is less than the capacity of the 8” pipe, therefore there is sufficient capacity. At no time did the flow depth exceed the pipe diameter at Node 2 of the downstream monitoring points during the rain events monitored.

Notes:

Pipe slopes, sizes and materials provided by Clark Patterson Lee for the Town of West Seneca

* Converted from measurements in TECSmith report dated 1/15/19 & 5/15/19

** See Sanitary Sewage Demand Calculations

Node 3 – Leydecker PS (10”):

Existing Peak Flow measured (wet weather event)	=	0.911 cfs (0.589 mgd)*
Proposed Multi-Family Peak Flow	=	0.112 cfs **
Proposed Peak Flow	=	1.023 cfs
Existing Peak Flow measured (overall)	=	1.188 cfs (0.768 mgd)*
Proposed Multi-Family Peak Flow	=	0.112 cfs **
Proposed Peak Flow	=	1.300 cfs

Capacity of existing 10” RCP pipe @ 1.5% = 2.905 cfs (inlet pipe)

Conclusion: The proposed peak flow is less than the capacity of the 10” inlet pipe, therefore there is sufficient capacity. At no time did the flow depth exceed the pipe diameter at Node 3 of the downstream monitoring points during the rain events monitored.

The proposed on site sanitary sewer will connect to the sewer system on Leydeceker Road. Downstream effluent from the proposed project will flow through the Leydeceker pump station location, below is an analysis of this pump station.

Leydecker Pump Station:

Existing Pump #1 Flowrate	=	719.07 gpm
Proposed Multi-Family Peak Flow	=	50.33 gpm
Proposed Peak Flow at Pump #1	=	769.4 gpm
Existing Pump #2 Flowrate	=	507.58 gpm
Proposed Multi-Family Peak Flow	=	50.33 gpm
Proposed Peak Flow at Pump #2	=	557.91 gpm
Existing Pump #1 & #2 Flowrate	=	824.82 gpm
Proposed Multi-Family Peak Flow	=	50.33 gpm
Proposed Peak Flow at Pump #1 & #2	=	875.15 gpm

Notes:

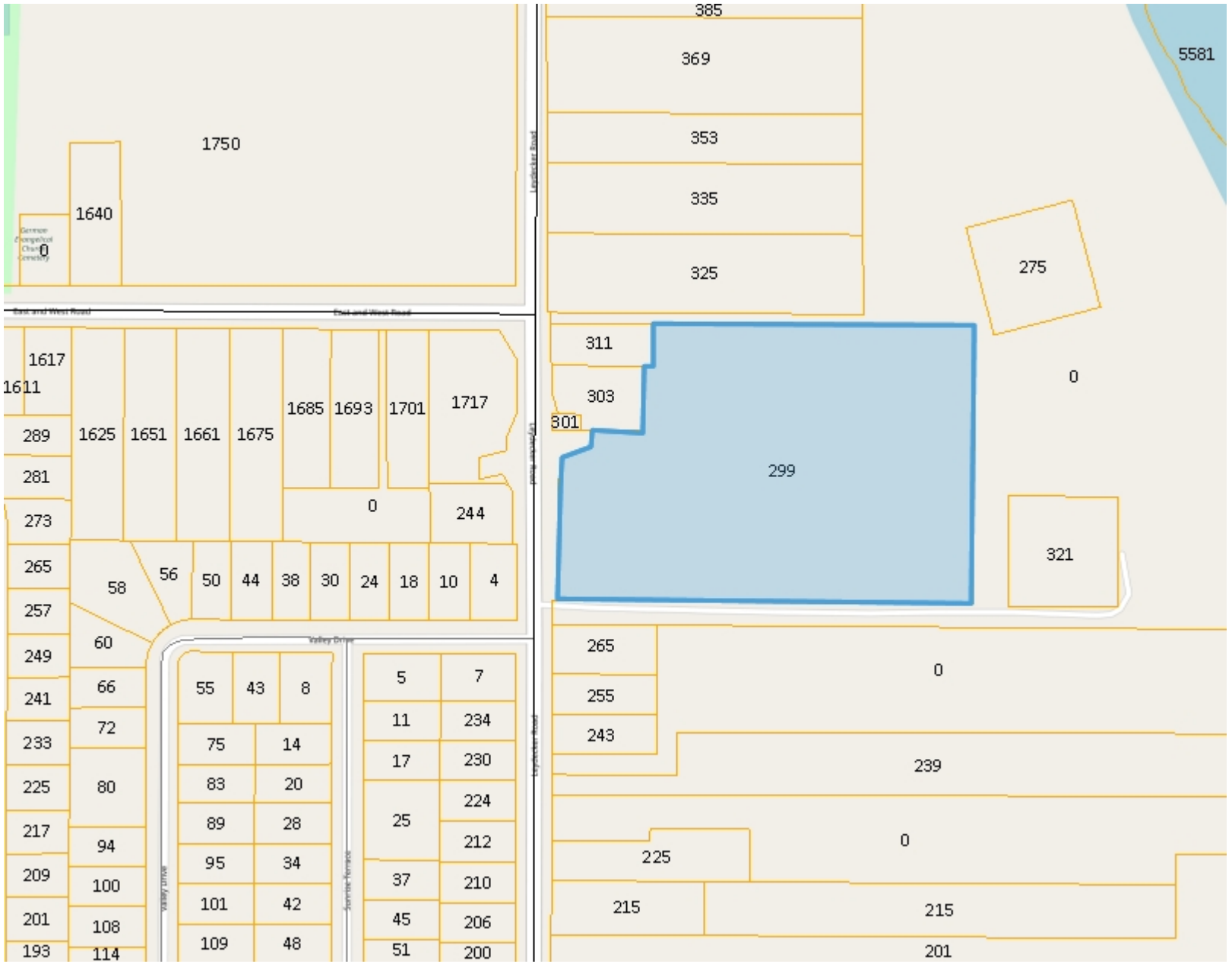
Pipe slopes, sizes and materials provided by Clark Patterson Lee for the Town of West Seneca

* Converted from measurements in TECSmith report dated 1/15/19 & 5/15/19

** See Sanitary Sewage Demand Calculations

Location Map

Erie County On-Line Mapping Application



Legend

- Parcels
- Streets and Highways
  - Interstate
  - Primary State Road
  - Secondary State Road
  - County Road
  - Local Road

0 0.07 0.1 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
THIS MAP IS NOT TO BE USED FOR NAVIGATION

ERIE COUNTY
DEPARTMENT OF ENVIRONMENT & PLANNING
OFFICE OF GIS

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

1: 4,514

Sanitary Demand Calculations

CARMINA WOOD MORRIS, D.P.C.
487 MAIN STREET, SUITE 500
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 18.200 Date: 8/2/2019
Project Name: Multi-Family Development
Project Address: 299 Leydecker Road West Seneca, NY
Subject: Sanitary Sewage Calculations
Sheet: 1 of 1

Sanitary Sewage Demand Calculations:

Proposed Multi-Family

110	gal/d/unit	x	10	units	=	1,100	gpd	*use 110 gallons per unit per day (1-bdrm)
220	gal/d/unit	x	44	units	=	9,680	gpd	*use 220 gallons per unit per day (2-bdrm)
330	gal/d/unit	x	20	units	=	6,600	gpd	*use 330 gallons per unit per day (3-bdrm)
Total Site Sanitary Demand:					=	17,380	gpd	

* The hydraulic loading rate is per “Design Standards for Intermediate Sized Wastewater Treatment Systems” 2014, NYSDEC.

Find Peak Sanitary Demand:

Peaking Factor based on Population:

Total demand: 17,380 gpd / 100 gpcd = 174 per capita

Population (P) = 174 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 4.17

Peak Sanitary Demand	=	17,380	x	4.17	=	72,468 gpd
					=	0.072 MGD
					=	0.112 cfs
					=	50.33 gpm

Required Infiltration and Inflow Mitigation

Peak Sanitary Flow	=	72,468	gpd	=	50.3	gpm	
4:1 offset flow per NYSDEC requirements	=	50.3	x	4	=	201.3	gpm req'd
Mitigation Credit	=	30	gpm / lateral				
Laterals to be replaced	=	6.71	laterals				**7 laterals to be replaced**

TECSmith Monitoring Report

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-687-1418
Fax: 716-655-3369

Date: January 15, 2019

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: 299 Leydecker Capacity Analysis

Chris Woods
487 Main Street, Suite 600
Buffalo, New York 14203
P: (716) 842-3165
F: (716) 842-0263

Project Name: 6625 Leydecker Capacity Analysis

Flow Monitoring Period: December 5, 2018 to January 3, 2019

Rain Events (> 0.5-inches) Monitored: December 6 (0.67”) and December 31 (0.53”)

Number of Monitoring Nodes: Three (3) downstream manholes

Node Locations and Descriptions:

- Node 1 Creek 24in (24")
- Node 2 216 Angle (8")
- Node 3 Leydecker PS (10")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time the flow depth exceed pipe diameter at Node 2 and Node 3 of the downstream nodes during the rain vents monitored.
- Two times the flow depth exceed pipe diameter at Node 1 of the downstream nodes during the rain vents monitored.

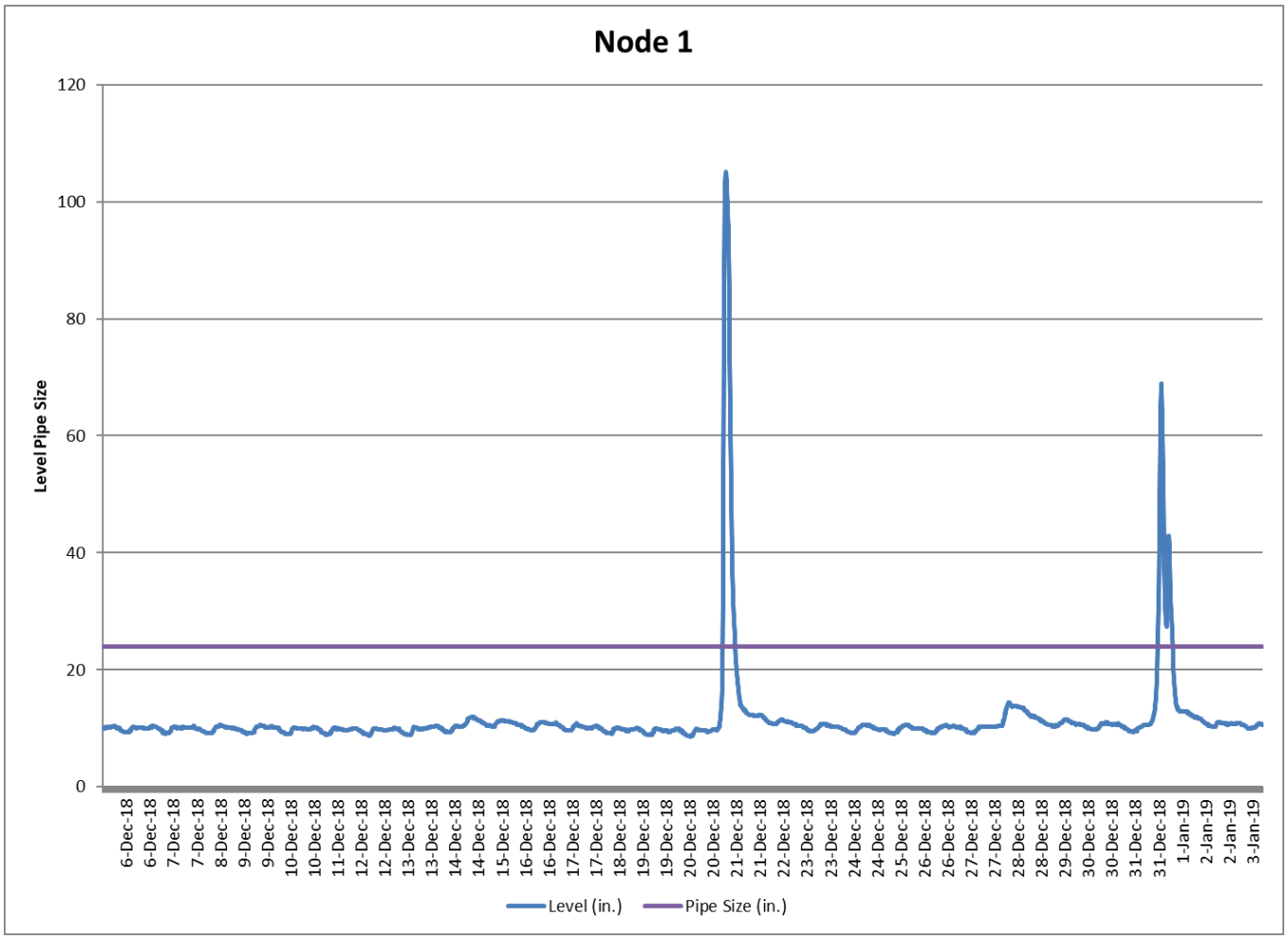
TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-687-1418
Fax: 716-655-3369

Depth of Flow Capacity Summary:

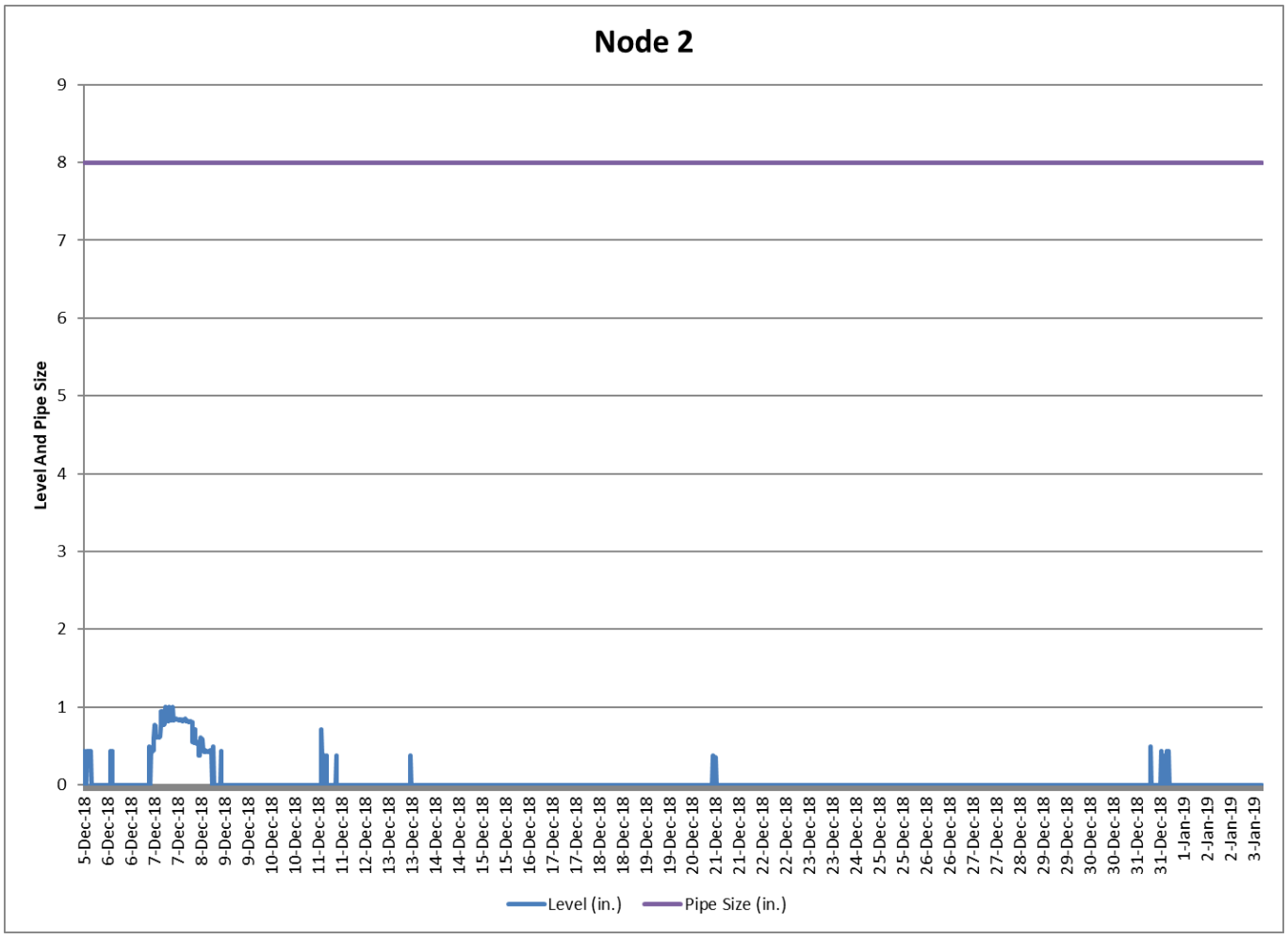
Depth of flow capacity is based on diameter of pipe. See graphs below.

- Two times during the monitoring period did depth of flow exceed pipe diameter at Node 1.



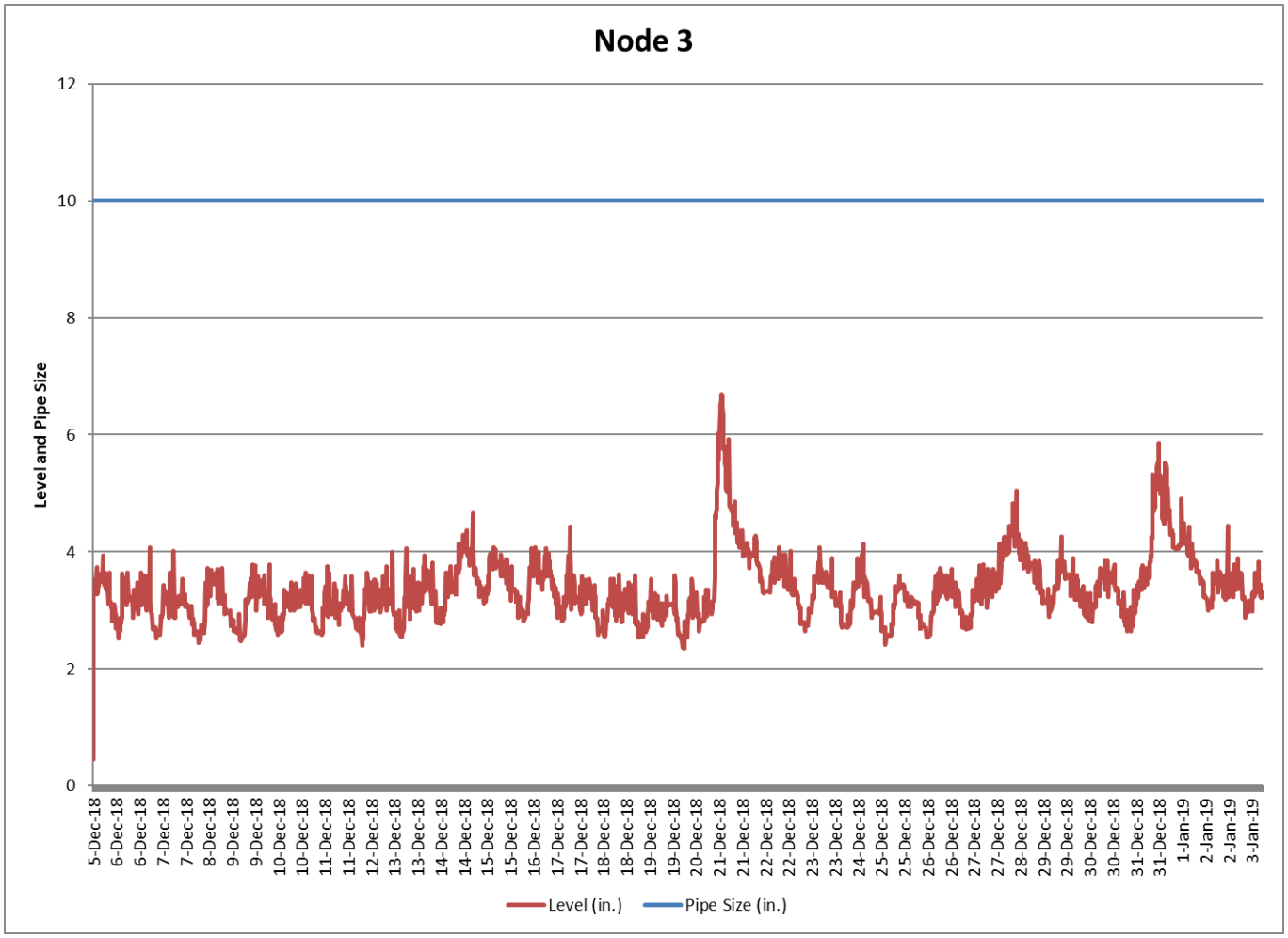
TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-687-1418
Fax: 716-655-3369

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 2.

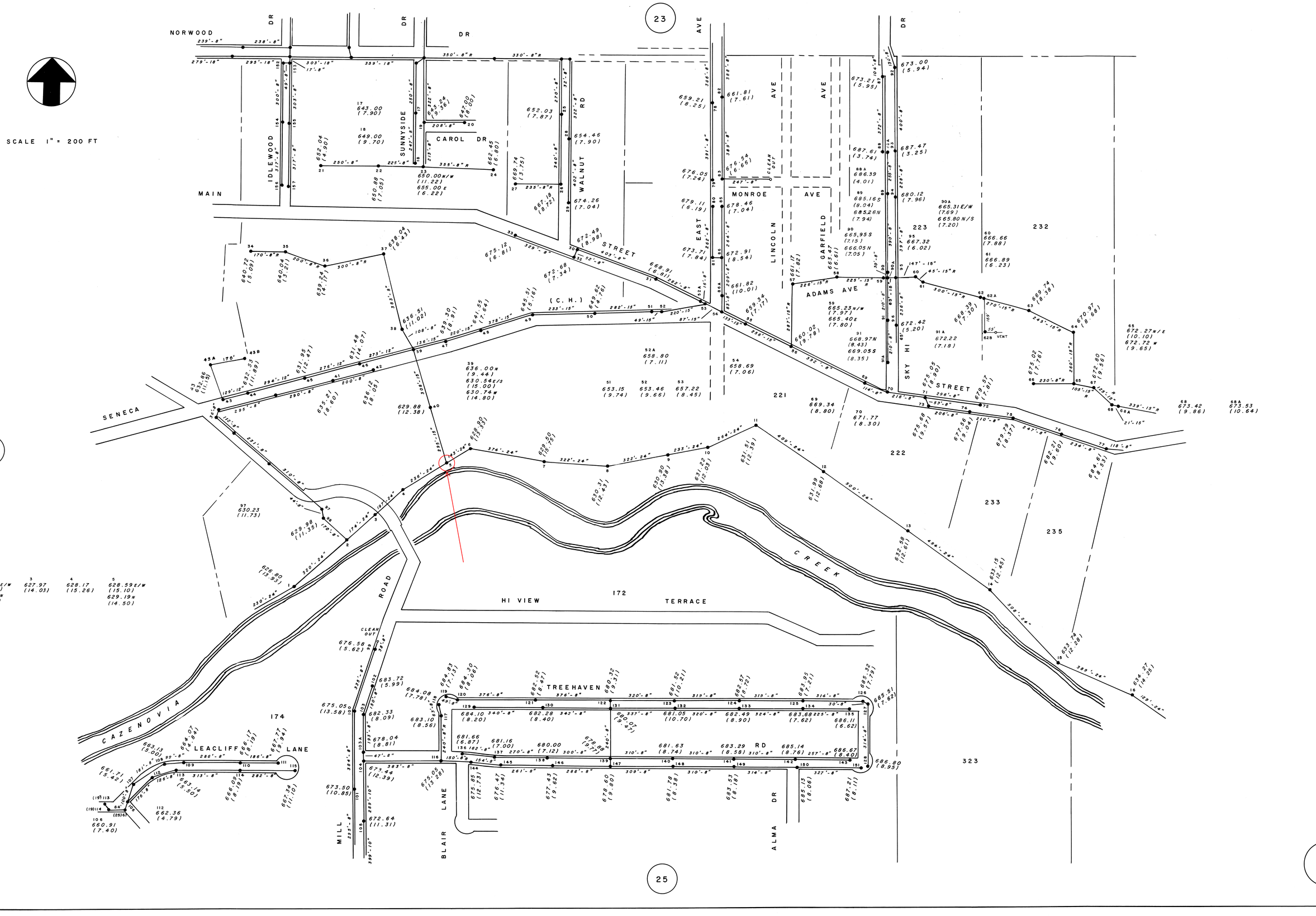


TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-687-1418
Fax: 716-655-3369

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 3.



Date	Node 1			Node 2			Node 3			Rain[2]	Snow
	Creek 24in (24")			216 Angle (8")			Leydecker PS (10")				
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	FLOW (GAL x 1,000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)	(inches)
12/5/2018	251.222	0.771	10.434	0.000	0.000	0.435	64.739	0.219	3.938	***0***	***0***
12/6/2018	477.241	0.732	10.436	0.000	0.000	0.435	122.953	0.256	4.072	***0.67***	***6.2***
12/7/2018	491.394	0.776	10.463	0.000	0.000	0.998	116.725	0.242	4.008	***0***	***0***
12/8/2018	461.424	0.846	10.626	0.000	0.000	0.847	122.087	0.219	3.727	***0.05***	***1.3***
12/9/2018	464.867	0.830	10.584	0.000	0.000	0.000	124.954	0.225	3.784	***0***	***0***
12/10/2018	440.105	0.705	10.211	0.000	0.000	0.000	122.668	0.189	3.649	***0***	***0***
12/11/2018	422.715	0.713	10.122	0.000	0.000	0.717	116.267	0.184	3.752	***0.06***	***0.5***
12/12/2018	451.829	0.699	10.102	0.000	0.000	0.000	121.503	0.230	4.000	***0***	***0***
12/13/2018	483.838	0.815	10.410	0.000	0.000	0.379	129.281	0.231	4.054	***0.04***	***1***
12/14/2018	717.978	1.262	11.932	0.000	0.000	0.000	174.603	0.348	4.664	***0***	***0***
12/15/2018	787.471	1.030	11.409	0.000	0.000	0.000	177.161	0.264	4.074	***0***	***0***
12/16/2018	610.433	0.925	11.062	0.000	0.000	0.000	161.469	0.265	4.079	***0.01***	***0***
12/17/2018	522.914	0.822	10.832	0.000	0.000	0.000	138.910	0.317	4.432	***0***	***0***
12/18/2018	414.358	0.638	10.094	0.000	0.000	0.000	116.597	0.202	3.607	***0***	***0***
12/19/2018	417.178	0.677	10.037	0.000	0.000	0.000	109.454	0.195	3.602	***0***	***0***
12/20/2018	407.484	1.478	14.463	0.000	0.000	0.379	125.510	0.461	5.184	***0.46***	***0***
12/21/2018	1663.483	2.958	105.079	0.000	0.000	0.372	364.977	0.768	6.692	***0.45***	***0***
12/22/2018	838.380	1.166	12.322	0.000	0.000	0.000	173.096	0.267	4.080	***0***	***0***
12/23/2018	498.998	0.901	10.770	0.000	0.000	0.000	140.857	0.269	4.081	***0.02***	***0***
12/24/2018	443.291	0.850	10.624	0.000	0.000	0.000	131.256	0.278	4.141	***0.09***	***1.5***
12/25/2018	450.432	0.851	10.667	0.000	0.000	0.000	119.974	0.184	3.593	***0.02***	***0.6***
12/26/2018	469.470	0.760	10.658	0.000	0.000	0.000	131.238	0.218	3.726	***0***	***0***
12/27/2018	472.387	0.790	10.856	0.000	0.000	0.000	137.678	0.264	4.130	***0.08***	***0***
12/28/2018	1292.062	1.753	14.393	0.000	0.000	0.000	253.941	0.440	5.040	***14***	***0***
12/29/2018	733.581	1.019	11.581	0.000	0.000	0.000	166.763	0.291	4.256	***0.04***	***0.3***
12/30/2018	511.849	0.937	11.069	0.000	0.000	0.000	150.771	0.240	3.849	***0.11***	***1.7***
12/31/2018	802.712	2.619	68.871	0.000	0.000	0.492	224.647	0.589	5.863	***0.53***	***0***
1/1/2019	1357.646	2.307	42.900	0.000	0.000	0.435	278.394	0.542	5.522	***0.07***	***0***
1/2/2019	576.128	0.895	11.093	0.000	0.000	0.000	158.556	0.336	4.446	***0***	***0***
1/3/2019	207.535	0.838	10.825	0.000	0.000	0.000	64.570	0.224	3.836	***0.05***	***0***
---	---	---	---	---	---	---	---	---	---	***16.75***	***13.1***


SCALE 1" = 200 FT
NORWOOD DR
MAIN
IDLEWOOD DR
SUNNYSIDE DR
CAROL DR
WALNUT RD
STREET
EAST AVE
LINCOLN AVE
GARFIELD AVE
MONROE AVE
ADAMS AVE
SKY HI STREET
(C. H.)
SENECA
CAZENOVIA ROAD
CREEK
HI VIEW TERRACE
TREEHAVEN RD
LEACLIFF LANE
BLAIR LANE
ALMA DR
MILL
CLEAN OUT
VENT
221
222
223
232
233
235
172
174
323

18

30

24

25

SCALE 1" = 200 FT

EAST & WEST (C. H.) ROAD

TAYLOR DR.

TAYLOR CT.

CONNER DR

CONNER CT:

LOUISE

CAMELOT

RENE DR

ASHLEY DR.

ANGLE

CAMELOT SQUARE

Sewer may not be exactly here as they did work 5 years ago

KELLYBROOK CT

NINA TERRACE

CARRIAGE PARK DR

ROYCROFT

VERMONT PL

NAPLES DR

WESTWOOD DR

COLEEN CT

NORTHRIDGE DR

CROFTON

CROFTON CT

TANGLE WOOD DR

OAKBROOK

SOUTHRIDGE DR

CARLA LANE

VILLA MARIA RD

COLONIAL MANOR CT

RESERVE (C. H.)

RESERVE (S. H.)

ROAD

SOUTHWESTERN BLVD

TOWN OF ORCHARD PARK

391

390

393

388

25

26

38

32

SCALE 1" = 200 FT

37

315 314 313

EAST & WEST (C.H.) ROAD

ROAD

6" FORCE MAIN

LIFT STATION

754.14 FORCE MAIN (2.56)
743.27 10" (13.43)

90'-6" LATERAL

DR

DR

VALLEY

TERR

SUNRISE

PATH

DEER

TRAIL

TRAIL

FAWN

GARRY

FAWN

LEYDECKER

IN THE WOODS

396 397 398

395

310

CAZENOVIA CREEK

ROAD (S.H.)

TOWN OF ELMA

RESERVE

ROAD

FORCE MAIN

ENCASED (24")

TOWN OF ORCHARD PARK

TRANSIT

32

38

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-687-1418
Fax: 716-655-3369

Date: May 15, 2019

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For: Leydecker Capacity Analysis

Chris Woods
487 Main Street, Suite 600
Buffalo, New York 14203
P: (716) 842-3165
F: (716) 842-0263

Project Name: Leydecker Capacity Analysis

Flow Monitoring Period: March 29, 2019 to April 29, 2019

Rain Events (> 0.5-inches) Monitored: March 31 (0.52”), April 14 (0.67”), April 19 (0.50”), and April 26 (0.59”)

Number of Monitoring Nodes: One (1) downstream manholes

Node Locations and Descriptions:

- Node 1 West Seneca Psych Center (14")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below)

- At no time the flow depth exceed pipe diameter at any of the downstream nodes during the rain vents monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

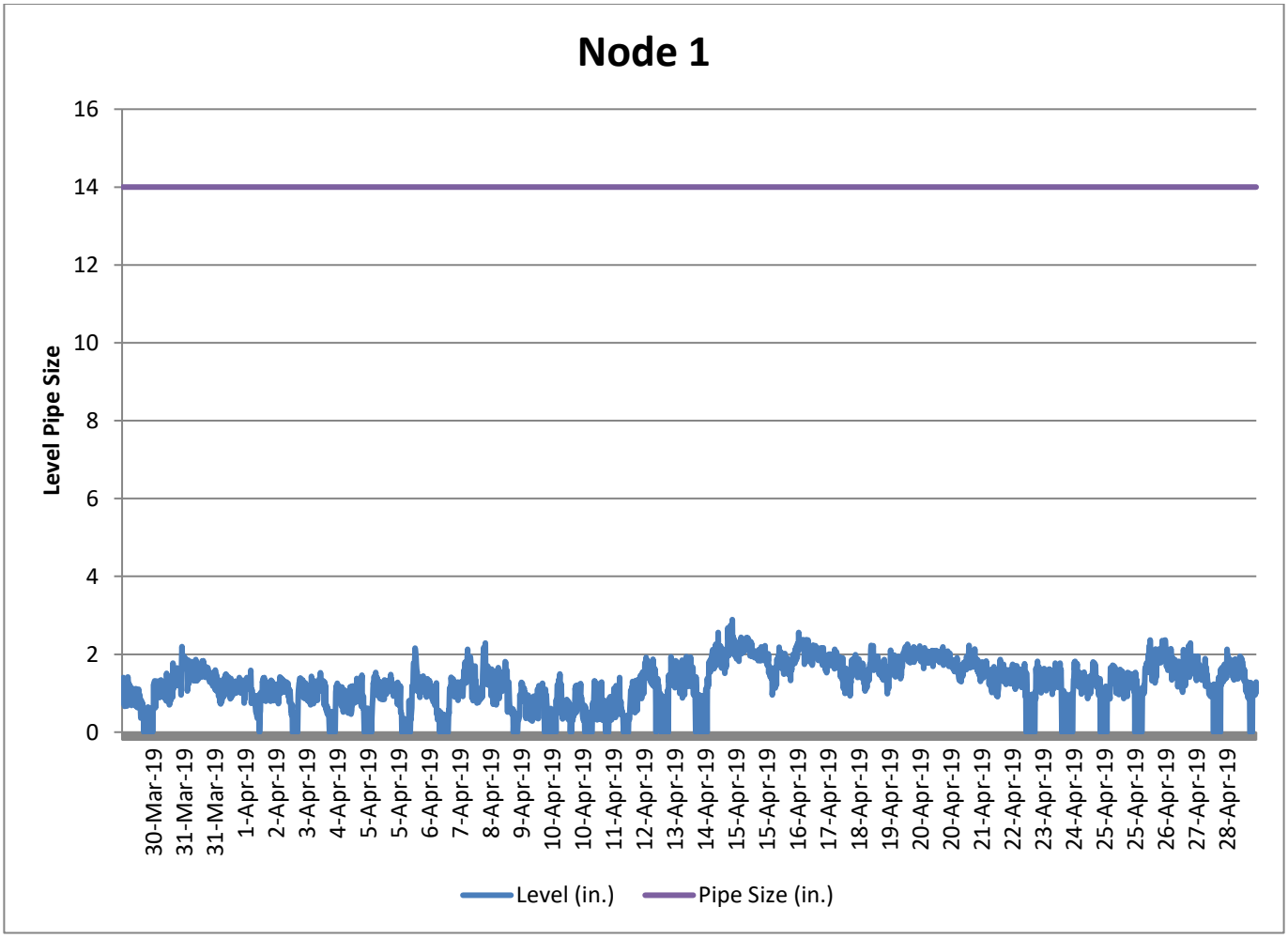
TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-687-1418
Fax: 716-655-3369

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- At no time during the monitoring period did depth of flow exceed pipe diameter at Node 1.



Date	*Node 1*			Rain[2]
	West Seneca Psych Center (14")			
	FLOW (GAL x 1,000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	(inches)
3/29/2019	46.947	0.216	1.421	***0.05***
3/30/2019	120.160	0.355	1.772	***0.9***
3/31/2019	347.332	0.620	2.196	***0.52***
4/1/2019	199.044	0.354	1.592	***0***
4/2/2019	143.392	0.289	1.415	***0***
4/3/2019	128.218	0.297	1.529	***0***
4/4/2019	90.122	0.281	1.463	***0***
4/5/2019	132.838	0.304	1.535	***0.15***
4/6/2019	133.267	0.488	2.160	***0***
4/7/2019	130.024	0.448	2.132	***0.04***
4/8/2019	180.780	0.549	2.290	***0.07***
4/9/2019	64.722	0.220	1.281	***0***
4/10/2019	59.940	0.283	1.498	***0***
4/11/2019	51.372	0.228	1.407	***0.04***
4/12/2019	116.983	0.379	1.924	***0.09***
4/13/2019	137.100	0.379	1.942	***0***
4/14/2019	280.127	0.820	2.743	***0.67***
4/15/2019	535.984	0.896	2.892	***0.11***
4/16/2019	388.481	0.724	2.560	***0.19***
4/17/2019	445.535	0.674	2.372	***0***
4/18/2019	301.031	0.602	2.227	***0***
4/19/2019	361.397	0.643	2.263	***0.5***
4/20/2019	470.383	0.599	2.215	***0.38***
4/21/2019	343.182	0.583	2.230	***0***
4/22/2019	214.056	0.427	1.870	***0***
4/23/2019	168.654	0.382	1.820	***0.02***
4/24/2019	135.297	0.367	1.823	***0***
4/25/2019	120.818	0.316	1.722	***0.03***
4/26/2019	315.085	0.655	2.369	***0.59***
4/27/2019	257.601	0.566	2.291	***0.01***
4/28/2019	205.160	0.459	2.132	***0.09***
4/29/2019	85.574	0.478	2.123	***0.09***
---	**---**	---	**---**	***4.54***

30

SCALE 1" = 200 FT

CAZENOVIA CREEK

2 - 195'-14" MECHANICAL JOINT CAST IRON PIPES CLASS 150

1 634.41 (13.99)
129'-24"
2 663.77 (7.14)
330'-15"
669.51 (9.46) 3
138'-15"
4 674.00 (9.37)
356'-15"
5 677.18 (8.97)
302'-15"
Manhole 6
680.46 (7.82) 6
6A
600'-15"
7 686.78 (10.40)
698.20 (8.18)
87'-8"
7A
100'-12"
8 694.41 (10.14)
300'-12"
9 699.34 (11.74)
R 110'-8"
24
R 255'-8"
25 R 350'-8"
26 R 350'-8"
27 R 350'-8"
28

323 322 321 320 319 318 316 315

EAST & WEST (C. H.) ROAD

350'-8" 74'-8" 236'-8" 305'-8" 305'-8" 10 58'-12" R 342'-12" 12 329'-12" 13 400'-12" 14 358'-12" 15 354'-12" 16 399'-12" 17 182'-12" 179'-12" 18 340'-12" 19 334'-12" 20 414'-12" 21 392'-12" 22 385'-12" 23 418'-12"

705.70 (7.28) 700.00 (11.74) 706.11 (7.04) 707.07 (7.84) 708.31 (9.65) 714.58 (9.49) 723.32 (8.28) 730.06 (7.94) 160'-8" 733.97 (8.86) 735.51 (4.80) 736.38 (9.60) 739.41 (9.91) 742.46 (10.40) 745.01 (9.05)

332'-8" 406'-8" ANGLE ROAD

24
37
32
31

Leydecker Pump Station Drawdown Test Results

Pump 1 (50 Herts)			***Pump 2 (50 Herts)***			***Pump 1+2 (50 Herts)***		
Test	Feet Drained Per Minute	Flow (GPM)	Test	Feet Drained Per Minute	Flow (GPM)	Test	Feet Drained Per Minute	Flow (GPM)
1	3.4	719.07	1	2.4	507.58	1	3.9	824.82
2	2.9	613.33	2	2.7	571.03	2	3.85	814.24